GALWAY - COUNTY GEOLOGICAL SITE REPORT

NAME OF SITE Other names used for site IGH THEME TOWNLAND(S) NEAREST TOWN/VILLAGE SIX INCH MAP NUMBER ITM CO-ORDINATES 1:50,000 O.S. SHEET No.45 Costelloe Murvey Granite Quarry Cloughmore North Quarry IGH11 Igneous intrusions, IGH6 Mineralogy Cloghmore North Indreabhán (Inveran) 91 499250E 723450N GSI BEDROCK 1:100,000 SHEET NO. 10, 11

Outline Site Description

A granite quarry by the R336 road between Indreabhán and Ros an Mhil harbour.

Geological System/Age and Primary Rock Type

Bedrock comprises Costelloe Murvey Granite. This leucogranite is the youngest of the granite varieties that comprise the late-Caledonian Galway Batholith. Emplacement of the Costelloe Murvey Granite has been dated to 380 Ma. The quarry is traversed by a dolerite dyke, which has been tentatively dated at ~230 Ma (Triassic).

Main Geological or Geomorphological Interest

Known locally as Cloghmore North Quarry, the quarry is familiar among the geological community as the Costelloe Murvey Granite Quarry. Worked for dimension stone, the granite type is well displayed in the quarry faces, quarry floor and in the debris piles in this working quarry.

The Costelloe Murvey Granite is a medium-coarse grained, high heat production, leucocratic component of the Galway Batholith. Fluorite mineralization is evident within the quarry, as are garnet minerals present in pegmatites. Radiometric dating of zircon minerals has yielded dates of 380 Ma, when the granite was emplaced into surrounding 400 Ma granites. Whilst most outcrops of the Costelloe Murvey Granite are unmineralised, this quarry hosts numerous horizontal and NNE (north-northeast) trending hydrothermal veins, containing quartz, fluorite, calcite, barite and minor sulphides such as galena and chalcopyrite. A NNE trending vertical dolerite dyke cuts through the granite in this quarry and both the granite and dyke are cut by fluorite-calcite-sulphide veins.

The Costelloe Murvey Granite is recognised for having high radioelement characteristics: Uranium (~15 ppm), Thorium (~40 ppm) and Potassium (~4%). Recent numerical modelling studies of the geothermal gradient in the uppermost 5 km of the Galway Granite have yielded high heat production temperatures of ~129°C at a depth of 5 km. The radioelement rich nature of the granite yields surface heat production values of 7 Wm³.

Site Importance – County Geological Site; may be recommended for geological NHA

This is an important County Geological Site in terms of the extent of granite exposure, hydrothermal veins, mineralization and the presence of a dolerite dyke. The heat production potential of the Costelloe Murvey Granite is of growing interest.

Management/promotion issues

The southern section of this quarry is actively worked (2018). Permission to access the site should be sought from the site foreman or from associated persons at the service station at Casla. The site is a popular field teaching location for geological student groups. The Costelloe Murvey Granite derives its name from the English translation of Casla and from the Murvey area west of Roundstone, where a similar (albeit different aged at 410 Ma), pink leucogranite was first described.



Costelloe-Murvey Granite Quarry, viewed looking west from the R336 road entrance.



Dolerite dyke exposed in quarry wall.



Loose granite blocks on quarry floor.



Medium-grained, K-feldspar-rich Costello Murvey Granite.



Purple fluorite mineralisation on loose quarry block.



Meehan et al. 2019. Geological Survey Ireland.